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February 27, 2017

Katie McClintock Acting Manager U. S. Environmental Protection Agency, Region 10 1200 Sixth Avenue, Suite 900 Seattle, WA 98101

Danica Glaser -

Danica.Glaser@epa.gov

Brett Dugan -

Dugan.Brett@epa.gov

Kevin Schanilec

schanilec.kevin@epa.gov

eescasemanagement.enrd@usdoj.gov

Via email to all

RE:

Ocean Gold, Ocean Cold d/b/a Ocean Companies

Consent Decree 3:16-cv-5179

Ocean Companies Section 32 Report update

Our File J339

Dear Administrator McClintock and Counsel:

This letter will follow up on the previous emails and letters relating to the Section 32 event that Ocean Companies reported to the EPA in early September 2016. Ocean Companies has provided at least 6 updates to the initial report since September 2016, and Ocean Companies now believes that it has ascertained, as well as can be, the root cause of the loss of R22 that occurred at Ocean Cold.

Summary:

Based on conversations with Dale McDonald of APEX, Lonnie Humbyrd of Ocean Cold, lab reports, and the pattern of leaks that are recorded in the Freon Maintenance Logs (Form N) at Ocean Cold, it is now clear that the cause of the leaks was the rapid deterioration of O-rings, gaskets, and seals in the Ocean Cold refrigeration system. (b) (4)

and highly questionable R22

purchased from Delvarus. While other possible causes have been explored, it is now apparent that the actions of (b) (4) and Delvarus, either individually or in combination lead to the leaks.

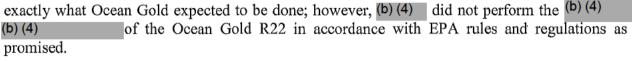
(b) (4)

For a period of time after the reclaimed Ocean Gold R22 was introduced to the Ocean Cold refrigeration system, there was no evidence that anything was occurring that would lead to a significant event releasing large quantities of R22 from Ocean Cold. However, during the months of June and July, there were occasional episodes of sticky valves, ice accumulation, and higher than normal discharge pressures. Each of these issues were dealt with in a timely and proper manner as reflected on the Form Ns at Ocean Cold.

In late July and through most of August, the frequency of excess air pressure, small leaks, and ice accumulation increased; however, all issues were managed properly by the certified technicians. In late August there began to be incidents of high pressure on a more frequent basis; together with replacement of gaskets and more frequent replacement of ice filters. Again, all of these issues were managed properly.

On August 30, 2016, 6,992 pounds of R22 purchased from Delarvas was introduced into the Ocean Cold system. Shortly after introduction of the Delarvas R22, the frequency of gasket leaks and high pressure increased. On September 2, 2016, a team of technicians from APEX arrived at the request of Ocean Cold to evaluate the system and try to get at the root cause of these increasing events. Eventually, all of the gaskets and O-rings in the Ocean Cold system had to be replaced as were many valves. These seals had been severely compromised by hydrochloric acid that had accumulated in the Ocean Cold system.

(b) (4)



(b) (4)

Ocean Companies believes it did all that it reasonably could do to be confident that the Freon it transferred from Ocean Gold to Ocean Cold and purchased from Delarvas was suitable for adding to the Ocean Cold refrigeration system. (b) (4)

(b) (4)

(b) (4) It is now clear that some of the R22 sold by Delarvas was inadequately tested prior to sale and of questionable quality.

As I have communicated previously, the management of Ocean Companies intends to convert Ocean Cold to R507 as early as March 2017. The conversion of Ocean Gold to R507 in May of 2016 has worked well, and management intends to convert Ocean Cold to R507 as soon as the processing seasons are done.

This letter provides a recap of the previous information provided to the EPA and an analysis of what is believed to have occurred and is also in support of a finding of Force Majeure with regard to this incident, an incident that was not caused by any action by Ocean Companies.

Finally, this email contains a request for ER408 settlement discussions that will result in a global resolution of the Consent Decree and any penalties that the EPA asserts may be due from Ocean Companies.

Previous emails and correspondence:

Ocean Companies has provided substantial information to the EPA regarding the September 2016 event. I do not intend to repeat that information; however, I do want to confirm some of the salient facts that will help to convey Ocean Companies' position and request for a global settlement discussion.

As summarized in Al Carter's letter of November 7, 2016, Ocean Companies has provided emails and attachments detailing what was known at the time of submission. Those emails included:

- September 9, 2016, email to the EPA notifying the EPA of an event at Ocean Cold involving a loss of R22 and indicating that Ocean Cold had technicians onsite from the company that built Ocean Cold trying to resolve the problem and determine the cause.
- September 30, 2016, email to the EPA notifying the EPA that the situation appeared to
 have been caused by acid in the refrigeration system and that Ocean Cold was replacing
 seals and gaskets that had deteriorated, presumably from the acid.
- October 7, 2016, email to the EPA notifying the EPA that Ocean Cold had not been able
 to establish exactly what happened and the extent of leakage of Freon. Attached to the
 email were three laboratory reports that indicated that the Freon in Ocean Cold had
 become contaminated with acid. The assumption at that time was that the acid had
 damaged seals and gaskets. My email advised that the Ocean Cold system was running
 properly.
- November 1, 2016, email to the EPA providing detailed information, with additional attachments regarding the history of the September event, the steps taken to prevent further leakage, the status of the investigation, and other matters. Attached to the email of November 1, 2016, were the following documents:
 - o Letter from (b) (4) dated June 24, 2016, that included the description of them actions as (b) (4)
 - The Service Order dated June 14, 2016, said that (b) (4) (b) (4)
 - Recovery Log for the recovered and cleaned R22;
 - An invoice for purchase of 7,000 pounds of R22 from Delarvas USA, LLC of Longwood, Florida;
 - A detailed narrative done by Al Carter that details the events, the leak testing, and the efforts to determine a cause. The narrative covers dates from May 22, 2016, (Ocean Gold R22 added to Ocean Cold) through to October 10, 2016;
 - APEX work Daily Field Reports from September 2, 2016, through September 23, 2016; and
 - Copies of the handwritten maintenance log for the period of August 23 2016, through September 6, 2016.

- November 3, 2016, email to the EPA providing additional information in the form of item-by-item responses to Director Kowalski's requests for information and the following attachments:
 - o Copies of Form I generated for the past 6 months;
 - o Copies of Form F generated for the past 6 months;
 - o Copies of Daily Refrigeration Maintenance Log entries and Form N Logs generated for the past 3 months (the attached Freon Forms had six months); and
 - o Copies of all Leak Check Log entries generated in the past 6 months.

Since Mr. Carter's letter, Ocean Companies has updated the EPA as to the following:

• December 9, 2016, email to Brett Dugan on acidity in the Ocean Cold system and provided a copy of the Refrigeration Analysis on the Ocean Cold system from (b) (4) and National Refrigerants, Inc.

I am including with this letter a copy of the typed Form Ns from Ocean Cold for the period of May 25, 2016, through December 26, 2016.

Probable Cause of Leaks:



I have spoken to Lonnie Humbyrd, who has run the Ocean Cold system since its construction, and he has provided me with examples of O-rings gaskets and seals that reveal the deterioration, flattening, loss of flexibility, and splitting that occurred. I enclose a photograph of some of the seals removed from the Ocean Cold equipment. In order for you to discern the loss of flexibility and flattening of the O-rings, it would be necessary to send the examples to your office(s). Let me know if you wish to have these sent to you.

Lonnie Humbyrd described the damage as if "the acid ate the seals around the outside," and he said he had never seen such deterioration of O-rings and gaskets. The neoprene O-rings were

flattened and hardened up, loosing the flexibility needed to seal properly. Other seals made of a non-asbestos gasket material were split and damaged. Lonnie Humbyrd and his crew replaced every O-ring, gasket, and seal in the Ocean Cold system. Ocean Cold ordered and installed over 60 sets of replacement seals from Hansen (Strainer Screen Kit).

I have enclosed two diagrams that show the structure of the Hansen valves that Ocean Cold uses in its refrigeration system. The diagrams show the location of the O-Rings and seals that are necessary for the valves to function properly.





Delvarus Freon:

In addition to the transfer of the R22 processed by (b) (4), there was approximately 7,000 pounds of R22 purchased from Delarvas, USA, LLC and added to Ocean Cold in late August 2016. The 7,000 pounds is described in the August 22, 2016, invoice as "reclaimed R-22 Freon"; a copy of that invoice has been previously provided to the EPA.

The timing of the introduction of 6,992 pounds of the Delarvas R22 and the rapid deterioration of the Ocean Cold system indicates that it is likely that the Delarvas R22 contributed to the hydrochloric acid deterioration. Ocean Companies did request purity certificates from Delarvas and the laboratory that tested the R-22. The 7,000 pounds of R-22 sold by Delarvas had come from three separate cylinders as shown on the enclosed Intertek reports:

- Cylinder 573192 analyzed April 25, 2016;
- Cylinder 573028 analyzed August 9, 2016; and
- Cylinder 482345 analyzed April 29, 2016.

The report of April 29, 2016, indicates that cylinder 482345 was not completely tested as required; there is only one result indicated for that cylinder and all the other results are "N/A." Unfortunately, Ocean Companies has no way of knowing how much of cylinder 482345 was in the seven cylinders of R22 delivered, and there was no residual R22 in the cylinders when Al

Carter went to get samples. So, at this time, we are simply left with the suspicious sequence of adding the Freon, followed by increased deterioration of the system, together with the inadquate testing of the Freon prior to sale to Ocean Cold. This circumstantial evidence leads to the conclusion that the Delarvas R22 was contaminated and contributed to the acid deterioration.



Confidential Settlement Communication Subject to ER 408:

While Ocean Companies is confident in its position with regard to the event of September 2016, it is likely that EPA may have some disagreement as to whether the Consent Decree has been violated. Ocean Companies is soon going to be a non-user of R22 (except for the Ice House) and will be spending a considerable amount of money to make the R507 conversion at Ocean Cold. With both Ocean Gold and Ocean Cold converted to R507, the risks of the release of an ozone depleting substance from those facilities will disappear.

However, the harsh reality is that Ocean Companies believes that the September event resulted in a very significant release of R22. While Chris Herzog of PermaCold still has some questions regarding his calculations, it is clear that Ocean Cold could have lost as much as 50,000-60,000 pounds of R22 as a result of the September event. Chris Herzog will do his official calculation as required under the provisions of the Consent Decree around March 15, 2016, and Ocean Cold will also pump out the R22 and have it weighed as part of its conversion to R507. The result of those calculations are expected to confirm a significant loss.

If the EPA determines that it will seek penalties under Article VI, (b) (4)
(b) (4)

My clients would like to begin a discussion for a global resolution of this matter, and I look forward to hearing from you.

Very truly yours,

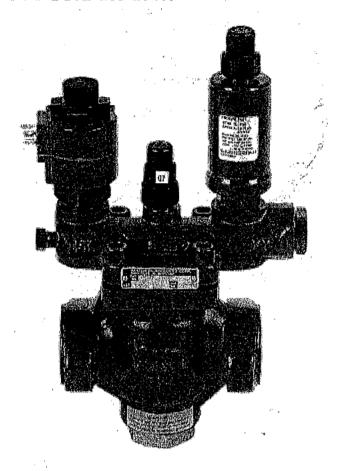
INGRAM, ZELASKO & GOODWIN ARTHUK A. BLAUVELT III

AAB:hs/cc Enclosures

cc: Ocean Companies



HANSEN TECHNOLOGIES



HA4AB
Regulator With Electric Wide Opening

INTRODUCTION

These advanced-design, strong-bodied, precision-manufactured MODULAR regulators are superior in their ability to overcome dirt and sticky oil during opening and tight closing. Models are available for nearly every control function requirement of industrial ammonia and commercial halocarbon refrigeration. These regulators are ideal for cold storage plants, poultry plants, meat packing, fish processing, freezers, ice plants, breweries, bottling plants, heat recovery units, petrochemical plants, pharmaceutical plants, supermarkets, and many others.

APPLICATIONS

Evaporator Pressure Control
Defrost Pressure Control
Condensing Pressure Regulation
Receiver Pressure Control
Hot Gas Bypass Capacity Regulation
Suction Pressure Control
Air or Liquid Temperature Regulation
Internal System Pressure Relief

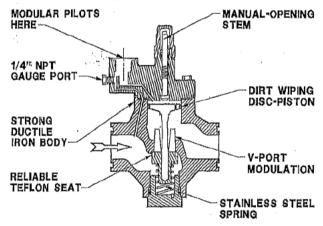
Specifications, Applications, Service Instructions & Parts

HA4A MODULAR
PRESSURE REGULATORS
3/4" THROUGH 6" PORT
(20 MM THROUGH 150 MM)

Various Connection Styles and Sizes for Refrigerants

KEY FEATURES

and the state of t



ADDITIONAL FEATURES

CSA Certified, CRN for Canada

Tolerant of Dry Systems
For Ammonia, R22, R134a and other HansenApproved Refrigerants
Wide Range of Options
Inlet, Outlet, or Differential Pressure
Wide Pressure Ranges
Electric Shut-Off, Dual, or Wide-Opening Available
Safe Working Pressure: 400 psig (27 bar)

Contents	Page
Regulator Variations	3
Capacities	4-5
Control Modules (Pilots)	6
Main Regulators Only (AR1, AR3)	7
Operation and Adjustment	811
Installation Dimensions	1213
Parts List	1418
Service and Maintenance, Abbreviations	19
Ordering Information, Conversions	20

MHANSEN



2" Strainer: ST200

INTRODUCTION

These rugged, refrigerant strainers (filters) are designed to remove foreign materials, like dirt and weld slag, from refrigeration systems. Strainers help prevent damage to valves and other components, reducing costly service and downtime. Strainers are usually close-coupled to solenoid valves, pressure regulators and other flanged valves.

ORDERING INFORMATION

	FOR VALVE	FLANC	E STYLE AND S	IZES
CAT NO			NNECTIONS AVAILABLE	
CATNO		FPT,		ago
	INCH (MM)	STD	ALSO	are
ST050	1/2" (13)	1/2"	1/4"	5/8"
ST050D†	6/32" (4)	172	1/4	0/6
ST100	3/4" (20)	3/4"	1", 1-1/4"	7/8"
ST100HD*	1" (25)	1"	3/4", 1-1/4"	1-1/8"
ST100/100**	1-1/4" (32)	1-1/4"	3/4", 1"	1-3/8"
ST200	1-1/2" (40)	1-1/2"	2"	1-5/8"
ST200/100**	2" (50)	2"	1-1/2"	2-1/8"
ST250 ST250/100**	2-1/2" (65)	2-1/2"	3"	2-5/8"
ST300	3" (80)	3"		3-1/8"
ST400	4" (100)	4"		4-1/8"
STW500	5" (125)	5 WN‡	_	
STW600	6" (150)	6 WN #	_	

[‡] Integral butt weld only

OPTIONS

Perforated Metal Strainer Basket: necessary for protection of compressors in suction side port applications (11/2" through 3"); contact factory.

Cloth Bags: available up to 4" for system start-up.

Filter System: An extra-fine filter system with double the cleansing capacity of standard strainers is available. See bulletin T782 for more information.

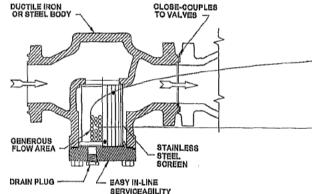
Specifications, Applications, Service Instructions & Parts ST STRAINERS (FILTERS) 1/2" thru 6" (13 mm thru 150 mm) for refrigerants

CE CRN

TO ORDER

Specify catalog number and if strainer will be closecoupled to valve or installed as a separate unit. If it will be a separate unit, also specify flange connection style and size.

KEY FEATURES



MATERIAL SPECIFICATIONS

Body: 1/2" through 4": Ductile iron, ASTM A536,

5" and 6": Cast steel, ASTM A352

Bottom Cover: 1/2": Steel, ASTM 108

%" through 11/4": Ductile iron, ASTM A536

11/2" through 6": Steel, ASTM A36

Drain Plug: Standard on %" through 11/4" (1/4" NPT), 11/2" through 4" (1/2" NPT), 5" & 6" (3/4" NPT), 1/2" optional (¼" NPT)

Screen: Stainless steel, 60 mesh (233 micron rating) or 100 mesh (150 micron rating)

ST050 has 100 mesh (150 micron rating)

Gaskets: Nonasbestos, graphite composite

Safe Working Pressure: 400 psig (27 bar)

Operating Temperature: -60°F to +240°F (-50°C to +115°C)

[†] integral but weld only †\$70500 includes Drain Plug. * Includes stainless steel screen with perforated metal backup.

^{** 100} mesh stainless steel screen.



National Refrigerants, Inc.

Analytical Laboratory

661 Kenyon Avenue Bridgeton, NJ 08302

Telephone (856) 455-2776 Fax (856) 455-4733

✓ Problems Found Action Required

☐ Normal Results No **Action Needed**

Refrigerant Analysis Report

Customer:

Ocean Cold LLC

P.O. No.:

NRIHP

Address:

1601 Yearout Drive

Refrigerant Type: R-22

Westport WA

Job Location:

98595

System S/N:

Contact:

Al Carter

Sample ID#:

Gold #2

Telephone:

360-581-3220

Lab. Reference:

161110-08

Fax:

acarter@oceancos.com

Date Rec.:

11/10/16

<u>Analysis</u>		Sample Results	<u>In-Service</u> <u>Limits</u>
Identification	By Gas Chromatography	R-22	
Moisture	parts per million by weight	278	80 Max.
High Boiling Residue	per cent by volume	0.10	2 Max.
Acidity	parts per million (as HCl)	<0.2	<u> 1 Max.</u>
Non-Condensable Gas	per cent by volume	-	<u>1.5 Max.</u>
Chloride	pass/fail	Pass	<u>pass</u>
Purity	% by weight (Gas Chromatography)	99.33	99,5 Min.
Particulates	pass/fail	Pass	_pass_
Other			

(1) 20 ppm for R-11, 113, 123.

Comments: Moisture above the normal range (80 ppm maximum). Low in purity (99.5 minimum). The high boiling residue (0,10%) is a cloudy dirty brown oil. All other above test results are normal. Trace organic impurities present are R-11: 0.37%, R-123: 0.07%, R-134a: 0.05%, R-23/R-32: 0.04%, R-125: 0.02%, R-12: 0.02%, R-114: 0.02%, R-143a: 0.01%, R-115: 0.01%, R-142b: 0.01%, R-124: 0.01% and two unknowns totaling 0.02%. Recommend you dry the refrigerant before re-use.

Laboratory Supervisor: Dan Wright, Lab Manager

Date:

11/11/2016

Attention: This Report is provided to the Customer only and may not be utilized by any other person or entity without written confirmation of same by National Refrigerants, Inc. (NRI). Upon written request, and with the written permission of the Customer, NRI will confirm the substance of this Report to any person or entity requesting such confirmation. Any alteration of this document by any person may constitute a violation of State and/or Federal Civil Criminal Law in the United States and/or other countries. The technical data and comments provided on the sample you supplied is done as a service to you as a customer of NRI. Since conditions of its use are outside of NRI's control, NRI assumes no liability for the use of such information or any damages incurred through its use or application. Nothing contained in such information is to be construed as contractual or providing some form of warranty on the part of NRI.

Revision: 001 Effective: 7/07 Form Number: AL-031-F

Hudson Technologies Company

PO Box 1541 One Blue Hill Plaza Pearl River, NY 10965 Phone: (845) 735-6000 Fax: (845) 512-6070

www.hudsontech.com



| INVOICE | INVOICE | Invoice No. | I0109836 | G/30/2016 | G/30/20

PAGE 1

ell L TO: (b) (4)	SHIP TO:	
(b) (4)	(b) (4)	
		1

ERIC RYDMAN ORDERED BY CUSTOMER P.O. NO. F.O.B. POINT PREPAID BY HTI Hudson 314211 ORDER DATE TERMS SALES PERSON **WA01** 5/20/2016 Net 30 Nell James Seattle, WA PART NUMBER QTY ORDERED EXT. PRICE

X-0000-RSIDE
RefrigerantSide Service X-0000-RECOVEREvacuation Services Per Regular Dey
X-0000-RECOVEREvacuation Services Per overtime day

(b) (4)



Sales Total

(b) (4)

Shipping & Handling

Miso. Charges

0.00

Remit payment to:

Hudson Technologies Company

7300 Solution Center

Chicago, U. 60677.7003

(b) (4)

Less Paid Amount

(b) (4)

(c) (4)





American Association for Laboratory Accreditation
Accredited to JSO/IEC Guide 17025 for Thermal and Chemical Testing

ALLCOOL REFRIGERANT RECLAIM

Attn: JIMMY TROUT

1539 TILCO DRIVE; UNIT #102 FREDERICK, MD 21704: USA

Intertek Report No:

0416102052

Revised Report No:

N/A

Report Date:

4/25/2016

Revision Date:

N/A

Customer Reference No:

72072010

Cylinder No:

573192

Date Received:

41017 4/25/2016

Condition as Received:

Proper

Purchase Order No:

- .

Date of Analysis:

4/25/2016

Test Desired:

*Modified AHRI 700-2015

Product Tested:

R-22 (Chlorodifluoromethane)

Certificate of Analysis

	Requirement	Result
Acidity (ppm by weight as HCL)	1.0	<0.1
Chloride (pass/fall)	pass	Pass
High Boiling Residue (% by volume)	.01	<0,01
Non-condensables (% by volume)	1,5	2.97
Other Refrigerants (% by weight)	.5	0.10
Particulates / Solids (pass/fall)	pass	Pass
Water (ppm by weight)	10	7

Comments/Revision History:

*Non-condensable gas (NCG) has been analyzed from the head space of a single 60% to 80% full cylinder. This is an acceptable deviation to Refrigerant Sampling Procedure Sec, 5,2,3 of ARI 700-06 per Appendix C-08 Section 9,3,3 Note #1, and has been validated to give equivelent results.

**Measurement Uncertainty -- Since this test was conducted in compilance with a standard that sets limits on the source of uncertainty and specifies the form of reported results, no measurement uncertainty evaluation has been included in this report.

(C)

Analysis By:

DyTS4

Approved By:

2-8 575





Jeremy Sandusky, Lab Tochnician

Tyler Eaton, Lab Technician

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1717 Arlingate Lane, Columbus, OH 43228
Toll-free 800-745-8091 614-279-8090 Fax 614-279-4642





American Association for Laboratory Accreditation Accredited to ISO/IEC Guide 17025 for Thermal and Chemical Testing

ALLCOOL REFRIGERANT RECLAIM

Attn: JIMMY TROUT

1539 TILCO DRIVE; UNIT #102 FREDERICK, MD 21704: USA

Intertek Report No:

0816103416

Revised Report No:

N/A

Report Date:

8/9/2016

Revision Date:

N/A

Customer Reference No: 41017

Cylinder No:

573028

Date Received:

8/9/2016

Condition as Received:

Proper

Purchase Order No:

PRE-PAID KIT

Date of Analysis:

8/9/2016

Test Desired:

*Modified AHRI 700-2015

Product Tested:

R-22 (Chlorodifluoromethane)

Certificate of Analysis

	Requirement	Result
Acidity (ppm by weight as HCL)	1.0	<0.1
Chloride (pass/fall)	pass	Pass
High Boiling Residue (% by volume)	.01	<0.01
Non-condensables (% by volume)	1.5	0.49
Other Refrigerants (% by weight)	.5	0.14
Particulates / Solids (pass/fall)	pass	Pass
Water (ppm by weight)	10	4

Comments/Revision History:

*Non-condensable gas (NCG) has been analyzed from the head space of a single 60% to 60% full cylinder. This is an acceptable deviation to Refrigerant Sampling Procedure Sec. 5.2.3 of ARI 700-06 per Appendix C-08 Section 9.3.3 Note #1, and has been validated to give equivolant results.

**Measurement Uncertainty – Since this test was conducted in compliance with a standard that sets limits on the source of uncertainty and specifies the form of reported results, no measurement uncertainty evaluation has been included in this report.

Analysis By:

Approved By:

Marissa Evans, Lab Supervisor

Jeremy Sandusky, Lab Technician

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ALLCOOL REFRIGERANT RECLAIM

Attn: JIMMY TROUT

1539 TILCO DRIVE: UNIT #102 FREDERICK, MD 21704: USA

Intertek Report No:

0416102125

Revised Report No:

N/A

Report Date:

4/29/2016

Revision Date:

N/A

Customer Reference No: 41017

Cylinder No:

482345

Date Received:

4/29/2016

Condition as Received: Proper

Purchase Order No:

212

Date of Analysis:

4/29/2016

Test Desired:

*Modified AHRI 700-2015

Product Tested:

R-22 (Chlorodifluoromethane)

Certificate of Analysis

	Requirement	<u>Result</u>
Acidity (ppm by weight as HCL)	1.0	N/A
Chloride (pass/fall)	pass	N/A
High Boiling Residue (% by volume)	.01	N/A
Non-condensables (% by volume)	1,5	0.87
Other Refrigerants (% by weight)	.5	N/A
Particulates / Solids (pass/fall)	pass	N/A
Water (ppm by weight)	10	N/A

Comments/Revision History:

*Non-condensable gas (NCG) has been analyzed from the head space of a single 60% to 80% full cylinder. This is an acceptable deviation to Refrigerant Sampling Procedure Sec. 5.2.3 of ARI 700-06 per Appendix C-08 Section 9.3.3 Note it1, and has been validated to give equivelant results.

**Measurement Uncertainty - Since this test was conducted in compilance with a standard that sets limits on the source of uncertainty and specifies the form of reported results, no measurement uncertainty evaluation has been included in this report.

Analysis By:

Approved By:

Jeremy Sandusky, Lab Technician

Tyler Eaton, Lab Technician

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Version 7.0 (09/01/2010)

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[INSTRUCTIONS: Use this form to log all maintenance, repairs, and leaks in between charging the system. When charging the system, enter the amount actually charged into the system on *Form F - Freon® Tracking Log*. Also, perform a leak rate calculation on *Form H - Leak Rate Calculator for Systems with Charges over 50 lbs. for use when Charging*.]

SYSTEM:

Ocean Cold Main System

DATE	DESCRIPTION OF SERVICE	TECHNICIAN
Anima verila Anima regila Anima		
05/25/2016	Day shift; leak checks marked off as performed. Opened suction and discharge valves on h2 compressor to re-introduce R-22 back into H2. checked for leaks with a propane tester, no leaks found at (9:38 am) will check again in 24 hours. Added 1992 lbs of R-22 to the system from Ocean Gold. there were two 1000 lb. containment vessels. #1 had 992 lbs. and #2 had 1000 lbs. Put a fitting on the liquid valve. Attached service to it, then hooked service hose to B1 compressor on suction side service valve, opened all valves. Had the vessels on a scale while evacuting them. Night shift: leak checks marked off as performed.	KRH/JDV
05/26/2016	Day shift: leak checked marked off as performed. Put 7 containment vessels of R-22 in the system. Total amount of R-22 was 6960. All vessels were put on scale to find out the total amount put into the system. Attached a fitting onto the liquid valve on vessel. Attached service hose to the fitting then attached hose to service valve on B2 compressor suction side to evacuate the vessels. Opened all valces and evacuated R-22 into the system. #3 @ 996 lbs. #4 @ 981 lbs. #5 @ 1001 lbs. #6 @ 991 lbs. #7 @ 996 lbs. #8 @ 995 lbs. #9 @ 1000 lbs. total from last two days (9) cylinders total (8952 lbs of R-22) Night shift: leak checks marked off as performed.	KRH/JDV
05/27/2016	Day shift: leak checks preformed on day shift. No production.	KRH
05/28/2016	Day shift: leak checks preformed on day shift. No production.	KRH
05/29/2016	Day shift: leak checks preformed on day shift. No production.	KRH
05/30/2016	Day shift: leak checks preformed on day shift. No production.	KRH



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
05/31/2016	Day shift: leak checks preformed on day shift. No production.	KRH
06/01/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JDV
06/02/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JDV
06/03/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JDV
06/04/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JDV
06/05/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JDV
06/06/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JDV
06/07/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	- JB/JDV
06/08/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JB/JDV
06/09/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JB/JDV
06/10/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JB/JDV



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
06/11/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JDV
06/12/2016	Day shift: leak checks performed on day shift. No night shift	KRH
06/13/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/CG
06/14/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/CG
06/15/2016	Day shift: leak checks performed on day shift. No night shift	KRH
06/16/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JV
06/17/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JV
06/18/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JV
06/19/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JV
06/20/2016	Day shift: leak checks marked off as performed. Slide valve leaking out off of shaft. Changed out old shaft seal on slide valve of B-5 compressor with new one. On H-1 compressor cleaned oil pump screen and changed filters (low oil pressure). B-5 & H-1 back on line. Night shift: leak checks marked off as performed.	KRH/JV
06/21/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JV



SYSTEM:

Ocean Cold Main System

DATE	DESCRIPTION OF SERVICE	TECHNICIAN
06/22/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JV
06/23/2016	Day shift: leak checks marked off as performed. Cleaned filters on south LPR. (lost 2 lbs of R-22). Night shift: leak checks marked off as performed.	KRH/JV
06/24/2016	Day shift: leak checks marked off as performed. Changed filters on south LPR. Night shift: leak checks marked off as performed.	KRH/JV
06/25/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JV
06/26/2016	Day shift: leak checks marked off as performed. Cleaned and changed filters on south LPR. Night shift: leak checks marked off as performed.	KRH/JV
06/27/2016	Day shift: leak checks marked off as performed. Changed and cleaned filters on south LPR> Night shift: leak checks marked off as performed.	KRH/JV
06/28/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JV
06/29/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed. No production	KRH/JV
06/30/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KHR/JV
07/01/2016	Day shift: leak checks marked off as performed. Purger solenoid valve was sticking, isolated purger, recovered back to B-2 suction, serviced solenoid valve. Rebuild on b-2 compressor's Viking oil pump. Night shift: leak checks marked off as performed.	KRH/JV
07/02/2016	Day shift: leak checks marked off as performed. Cleaned strainer off of B-2 compressor's Viking pump.	KRH



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
07/03/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/CB
07/04/2016	Day shift: leak checks marked off as performed.	KRH
07/05/2016	Day shift: leak checks marked off as performed. Discharge valve on North LPR right side packing leak. Tightened packing checked for leaks, no leaks found. Leak found due to yellow ice. Tested with propane sniffer. Estimated loss of 10 lbs. Compressor shut down due to high discharge pressure. Cleared alarms and started compressors back up. turned off compressors to purge air out of system.	KRH
07/06/2016	Day shift: leak checks marked off as performed. Changed ice filters on South LPR and on top of 106. Retest of packing leak on North LPR, no leaks.	KRH
07/07/2016	Day shift: leak checks marked off as performed. Changed filters on North and South LPR's.	KRH
07/08/2016	Day shift: leak checks marked off as performed. Rebuild on inner cooler liquid pump	KRH/JV
07/09/2016	Day shift: leak checks marked off as performed. Changed ice filters on south LPR. Changing heater probe on H-1 compressor. Took out heater probe on B2 compressor.	KRH/JV
07/10/2016	Day shift: leak checks marked off as performed. Changed filters on North and South LPR's. Night shift: leak checks marked off as performed.	KRH/JV
07/11/2016	Day shift: leak checks marked off as performed. Changed filters on South LPR	KRH/JV
07/12/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JV
07/13/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JV



SYSTEM:

Ocean Cold Main System

DATE	DESCRIPTION OF SERVICE	TECHNICIAN
07/14/2016	Day shift: leak checks marked off as performed. Liquid pump #1 on North LPR was out of oil. Refilled cylinder with oil, temp in freezer went down to -10. Changed and cleaned filters on North LPR. Night shift: leak checks marked off as performed.	KRH/JV
07/15/2016	Day shift: leak checks marked of as performed. Night shift: leak checks marked off as performed.	JDV/DM
07/16/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KH/DM
07/17/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KH/DM
07/18/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JV
07/19/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JV
07/20/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/CG
07/21/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JV
07/22/2016	Day shift: leak checks marked off as performed. Reinstalled heater probe in B-2 compressor removed on 7/9/16. changed ice filter on top of 92. Night shift: leak checks marked off as performed.	KRH/JV
07/23/2016	Day shift: leak checks marked off as performed. Changed filters on South LPR. Changed ice filters on top of 106. Night shift: leak checks marked off as performed.	KRH/JV
07/24/2016	Day shift: leak checks marked off as performed. Changed filters on South LPR.	KRH



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
07/25/2016	Day shift: leak checks marked off as performed. Changed filters on South LPR.	KRH
07/26/2016	Day shift: leak checks marked off as performed. Changed filters on South LPR. Night shift: leak checks marked off as performed. NOTE: verbal notification of requirements for leak checks and the requirement to initial the maintenance log page for each day. Update of RCMP and new RCMP copies delivered to Ocean Cold maintenance area.	KRH/CG
07/27/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed	KRH/CG
07/28/2016	Day shift: leak checks marked off as performed. Shut down all compressors and liquid pumps. Opened up comdenser air purge line, relieving excess air pressure from 200 psi to 100 psi. Closed air line, started up B5 & H2. Ran for 5 minutes then shut down and purged air line again. Repeated this 2 more times. After last purge cycle, started back up compressors and liquid pumps. Recovered 18 gallons of oil from B3, 30 gallons of oil from B1, 20 gallons of oil from B4/5. changed ice filters on South LPR. Night shift: leak checks marked off as performed. NOTE: Evacuated refrigeration oil from B-1, B-3 and H-1 compressors into 55 gallon barrels. Hooked up service hose to service valve off of viking pump strainer housing flange. Opened service valve and ball valve on service hose. Watched the sight glasses to know when the proper amount was evacuated from the compressors. 80 gallons of oil evacuated. Estimated 50 lbs of R-22 lost in oil mixture. Form I will be filled out.	KRH/JV
07/29/2016	Day shift: leak checks marked off as performed. Changed ice filters North LPR. Night shift: leak checks marked off as performed.	KRH/JDV
07/30/2016	Day shift: leak checks marked off as performed. Serviced ice filters on 76. changed ice filters at North and South LPR's.	KRH/JDV
07/31/2016	Day shift; leak checks marked off as performed. Changed ice filters North LPR. Serviced ice filters on 72 after running it for 12 hours. Sniff test whole building and freezers. Night shift: leak checks marked off as performed.	JDV/CG
08/01/2016	Day shift: leak checks marked off as performed. Serviced hot gas infeed and outfeed filters on the 92 spriral. Had to shutdown and manually purge excess air from the condensers discharge line. Changed ice filters on North and South LPR's. Night shift: leak checks marked off as	JDV/CG



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
08/02/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/CG
08/03/2016	Day shift: leak checks marked off as performed. Pressure test on 76 spiral freezer's evaporator. Turned off supply line and opened solenoid valve, closed hot gas return and suction lines on valves. Hooked up pressure manifold to service valve on hot gas return line, then opened up hot gas until gage on manifold read 90 psi at 9:45 am. Isolated evaporators #12, #6a, and #6b from system turned off liquid, suction, hot gas and hot gas reutrned valves. Had to shut down the entire system (compressors, liquid pumps, condensers) and manually purge the excess air from the condenser discharge. Pressure test on 106 - closed liquid valve, suction valve, hot gas feed valve and hot gas return. Opened up solenoid bypass valves and attached pressure gauge. Opened hot gas valve until system reached 90 psi and then closed valve. Pressure remained 90 psi for 12 hours. Returned system to online conditions. Pressure test on 92 - repeated same steps as for 106 upon bringing the system to 90 psi, noticed an immediated drop in pressure. 92 failed pressure test. Isolated system and informed superivisor of problem. Night shift: leak checks	KRH/JDV
08/04/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JDV
08/05/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/JDV
08/06/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/TR
08/07/2016	Day shift: leak checks marked off as performed. Shutdown all compressors (B4, B5, H2, H3) and condensers do to High Cold Discharge pressure. Opened up condenser air purge line to bleed off air from 200 psi to 100 psi. Shut service valve on purge line an started B4, B5, H2, H3 compressors and condensers. Estimated loss of R-22 (20 lbs). changed filters on South LPR. Night shift: leak checks marked off as performed.	KRH/CG
08/08/2016	Day shift: leak checks marked off as performed. Retested for leaks after High discharge pressure. Night shift: leak checks marked off as performed.	KRH/CG



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
08/09/2016	Day shift: Leak checks marked off as performed. Evacuated oil out of H3 compressor viking pump screen housing flange service valve. In to a 55 gallon barrel. Evacuated 25 gallons of oil.	KRH/TMR
08/10/2016	Day shift: leak checks marked off as performed. Shutdown all compressors and condensers due to high discharge pressure. Opened up condersre air purge line to bleed off air from 200 psi down to 100 psi. Shut service valve on purge line and started B4, B3, H2, H3 compressors and condensors. Loss of R-22, (20 lbs) Evacuated oil out of H2 compressor into 55 gallon barrel attached service hose to the service valve on the viking pump house flange and put the other end of the hose into barrel. Evacuated 20 gallons of oil. Night shift: leak checks marked off as	KRH/CG
08/11/2016	Day shift: leak checks marked off as performed. Retested for leaks after high discharge pressure. Night shift: leak checks marked off as performed.	KRH/TR
08/12/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/CG
08/13/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/CG
08/14/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/CG
08/15/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KRH/TR
08/16/2016	Day shift: leak checks marked off as performed. Changed freezer B evaporators from -10 F to -5 F on the sequence panel. Changed ice filters South LPR. Night shift: leak checks marked off as performed.	KRH/JV
08/17/2016	Day shift: leak checks marked off as performed. Changed ice filters on South LPR. Added oil to liquid pump on North LPR. Night shift: leak checks marked off as performed.	KRH/CG
08/18/2016	Day shift: leak checks marked off as performed. Pump out 5 lbs of R-22, (per Eric Rydman). Night shift: leak checks marked off as performed.	KRH/CG



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
08/19/2016	Day shift: leak checks marked off as performed. Purged system - started at 1:45 pm. Shutdown all compressors and condensors due to high discharge pressure, opened up condenser line to bleed off air from 200 psi to 100 psi. Shut service valve on purge line and restarted compressors & condensers. night shift: leak checks marked off as performed.	KH/TR/DW
08/20/2016	Day shift; leak checks marked off as performed. Changed ice filters on South LPR. Installed replacement gaskets on ice filter strainers on 6a and 6b evaporators in freezer A. Night shift: leak checks marked off as performed.	KRH/TR
08/21/2016	Day shift: leak checks marked off as performed. Changed ice filters on North and South LPR. Night shift: leak checks marked off as performed.	KRH/JV
08/22/2016	Day shift: leak checks marked off as performed. Changed ice filters on North and South LPR. Night shift: leak checks marked off as performed.	KRH/JV/TR
08/23/2016	Day shift: leak checks marked off as performed. Changed ice filters on North and South LPR. Pressure tested 6a - 6b evaporators. 6a 100 psi, 6b 75 psi with hot gas. Night shift: leak checks marked off as performed.	KH/CG
08/24/2016	Day shift: leak checks marked off as performed. Changed ice filters on South LPR. Pressure test on 92 spiral freezer and west ice machine, closed off liquid valves on 92, hot gas and hot gas return. Let line go into a vacuum through the suction line. closed suction valve. slowly openned up hot gas valve till there was 100 psi of positive pressure. kept pressure for four hours took off test. Ice machine, closed liquid valve let the machine go into a vacuum through the suction line. closed suction valve once it was under a vacuum, opened up hot gas valve to put pressure into machine. 100 psi for four hours, no change, took off of test.	KRH/CG
08/25/2016	Day shift: leak checks marked off as performed. Hot gas pressure test on evaporator 6a, 6b, 7, & 8. Opened to gas valve to pressure up evaporators to 100 psi. Check pressure with a gauge manifold. shut hot gas valve when pressure hit 100 psi. Night shift: leak checks marked off as	KH/CG
08/26/2016	Day shift: leak checks marked off as performed. Removed 35 gallons of oil from H2 compressor. Removed 15 gallons of oil from H3 compressor. Changed ice filters on north and south LPR. Evaporator 6a, 6b, &8 down 10 psi evaporator 7 down 15 psi. Night shift: leak checks marked off as performed.	KH/CG
08/27/2016	Day shift: leak checks marked off as performed. Changed ice filters on North and South LPR. Evaporator 6a, 6b and 8 down another 12 psi. Evaporator 7 down 15 psi. Night shift: leak checks marked off as performed.	KH/TR/JV



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
08/28/2016	Day shift; leak checks marked off as performed. Changed Ice filters on North and South LPR. Check hot gas pressure test all down in pressure. 35 psi on evaporator 6a, 6b, 7 & 8. night shift: leak checks marked off as performed.	KH/CG
08/29/2016	Day shift: leak checks marked off as performed. Changed ice filters on North and South LPR. Pump seal failed on North LPR, #1 liquid pump. Isolated and pulled down to vaccum, switiched over to pump #2. Put evaporator 6a, 6b, & 7 on nitrogen test. Hooked hose up to service valve on hot gas line. On 6a & 6b gauge manifold was hooked up to suction line. Brought to 100 psi. #7 gauge manifold was hooked up to the liquid line.	KH/JV
08/30/2016	Day shift: leak checks marked off as performed. Changed ice filters on North and South LPR. Manual purge of condenser excess air. Introduced 6992 lbs of R-22 into the system. Received 1000 lb vessels entered R-22 into suction line behind North LPR. Hook service hose to the liquid side of the vessel and the other side of hose o suction line. opened valves to introduce R-22 to the system. Brought the vessels to compressor room to bring the vessels to a suction while evacuating had each vessel on a scale to know how much R-22 we were putting in the system. Used compressor B-1 to bring vessels to a suction. Hooked up hose to the suction side of B-1 compressor and the other side liquid side of vessel, opened valves and evacuated the remaining R-22 from vessel. evaporator #8 had a leak on check valve on the hot gas line. the cause of the leak was a gasket failure unbolted flange bolts, took out old gasket and replaced with new. Tightened all bolts back up. then put evaporator #8 on Nitrogen test. Hooked hose up to hot gas service valve and the other side to nitrogen vessel and regulator. Had gauge manifold hooked up to liquid line service valve, turned on the valve. Bought pressure to 100 psi. Checked evaporator 6a, 6b & 7. 6a and 6b held 100 psi of pressure. evaporator 7 was down to 40 psi. Night shift: leak checks marked off as performed.	KH/JV
08/31/2016	Day shift; leak checks marked off as performed. Limit switch on pump #2 on North LPR failed, replaced with new. Changed ice filters on North and South LPR's. Removing pump #1 north LPR for rebuild. Rebuilt pump down in the compressor room with a pump rebuild kit. Night shift: leak checks marked off as performed.	KH/TR
09/01/2016	Day shift: leak checks marked off as performed. Turned off all fans on condensers. West side of condensers for a sniffer test with a propane sniffer. All past. Also sprayed all valves with soap water, all past. Shut liquid line going into south LPR to get liquid to go to the north LPR. 4 hours. Pressure tested 76 and 92 sprial freezers. closed liquid, hot gas and hot gas return valves to bring lines into a suction. checked suction with gauge manifold. Shut suction valve. Hook hose up to hot gas line service valve put 100 psi into lines. night shift: leak checks marked off as performed.	KH/CG



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
DATE 09/02/2016	Day shift: leak checks marked off as performed. APEX guys arrived at 1:30 pm started leak checks and evaulating system. We slugged outside condensers to see if anything was stuck inside. Pressure checked #1 at 100 psi & #2 ok evaporators. Pressure checked 92 & 76. Pressure checked 106 inside bank lost pressure, 100 psi down to 60 psi. 106 strainer was leaking. repaired and reinstalled. Manually pumping end freezer. Pump liquid from other end back to end freezer. Leak checked engine room some small leaks found. found two valves on 2 & 3 bad valve seals leaking by, (Hanson valves). Check solenoid liquid valve on north LPR. shut valves hook up hose to service valve an suction valve to evacuate. Unbolted flange to check inner valve assembly. valve was good, put back on line. checked 76 & 92 spiral freezers. psi test held 100 psi for 24 hours, took off test, opened suction, hot gas return, hot gas and liquid valves. 106 pressure test: closed liquid valves, hot gas and hot gas return. checked with gauge manifold for vaccum, check ok. shut suction valve, hook gauge manifold to to hot gas return service valve. hooked hose up tpo hot gas service valve and the other side nitrogen vessel. opened valves	TECHNICIAN
	brought pressure up to 100 psi, (106a & 106b). condenser #1 pressure test: closed inlet valves and output valves. closed main purge valve. Open solenoid purge cross over valves. Hook service hose up to service valve on the purge crossover line and hooked hose up to compressor B2 suction side. evacuated condenser. Took the hose end that was on compressor, hooked it up to a 6 pack of nitrogen. Brought condensers to 100 psi. put a vaccum pump on line, brought to -30 psi opened all valves for operation. 100 psi test for 6 hours. check ice filter on evaporator #11. shut liquid line and heated up filter housing wiith a torch, shut hand expansion valve. hooked up gauge manifold t check for vaccum. took flange bolts out to check filter. filter was good, put filter back in & tightened flange bolts and opened valves. Night shift: leak checks marked off as	



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
09/03/2016	Day shift: leak checks marked off as performed. Leak checking plant, changing strainers and filters. Pressure checked condenser 1 & 2 no leaks. Condenser #2 pressure test: shut inlet and outlet valves and main purge valve. Opened purg crossover solenoid valves, put hose on purge crossover service valve. put other end of hose on to B2 compressor suction side. Opened valve to evacuate. Once evacuated took hose off B2 compressor and hooked it up to 6 pack of nitrogen. opened valve. brought condenser to 100 psi for hours. brought condenser back to atmospheric pressure. Hooked up vaccum pump and bought condenser to -50 psi. opended condenser back up for operation. 100 psi test 6 hours. Condenser #3: shut all purge valves. drilled a hole in line and welded a 1/4 FNPT coupling in line an added service valve. opened purge valve and tested weld with soap water, weld passed. Ice machines: isolated ice machines north and south. closed liquid line valve. opened liquid line solenoid bypass, opened liquid line expansion valve, allowed suction to continue unitl deep vaccum was reached. closed sustion line. hooked up nitrogen pack and filled system to 100 psi. Repeated above steps for 2nd ice machine. Placed 106 side A back to 125 psi with nitrogen. Night shift: leak checks marked off as performed.	DM/JV
09/04/2016	Day shift; leak checks marked off as performed. APEX replaced valve stems on 1, 2, 3, 4 evaporators in freezer A. Condenser #3 placed on Nitrogen pressure test. 100 psi. Ice Machines North and south held 100 psi for 24 hours. Removed nitrogren charge, hooked up vacuum pump and brought systems down to deep vacuum. Ice machine pressure test, passed. 106 both A & B coils passed nitrogen test. Night shift: leak checks marked off as performed.	TR/CG
09/05/2016	Day shift: leak checks marked off as performed. Pulled and checked liquid level probe at end LPR for freezer A. Cleaned and reinstalled. Reinstalled liquid pump on LPR, put under vaccum. APEX rebuilt 4 valves in freezer A, (Hanson 1"), starting inspection on freezer B. Pressure checking condenser #3 & # 4. #3 no leaks, 6 hours. turned evaporators 1 & 2 off and set point to (+) 1- degrees in freezer A. Reinstalled #1 liquid pump and limit switch, placed vaccum pump on. Night shift: leak checks marked off as performed.	DM
09/06/2016	Day shift: leak checks marked off as performed. Checked liquid pumps #1 & #3 ready for rebuild. Pressure tested #4 condenser, 100 psi for 6 hours. Passed. Evacuated #5 condenser, nitogen pressure test up to 100 psi. Evaporator #9 inspected, leak liquid line solenoid valve body oring. Isolated and placed on vaccuum. NIght shift: leak checks marked off as performed.	DM/JV



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
09/07/2016	Day shift: leak checks marked off as performed. Pressure test on condenser #5 for 24 hours. Condenser past 100 psi, hooked up vaccum pump and pulled system down to a deep vaccum, returned to online. Inspection of #9 evaporator liquid line valve body. Replaced O-ring on bottom of valve body. solenoid, O-ring, sealing O-ring, solenoid gasket, valve body stem, and valve body gasket. Pressure test with nitrogen 100 psi, 2:00 pm. changed ice filters on South LPR. Night shift: leak checks marked off as performed.	KH/DM
09/08/2016	Day shift: leak checks marked off as performed. Isolated and recovered North LPR #3 liquid pump. Pressure test help on #9 evaporator, hooked up vaccum pump, brought down to deep vaccum, returned to service. Pump #3 North LPR found leak on main feed top valve and discharge side strainer. ordering parts for stop valve, strainer leak was 2 loose bots on valve body. past soap test. Pump #2 North LPR had a leak on discharge side of strainer valve body, tighten bolts, passed soap test. Pump #1 North LPR same as #2. Night shift: leak checks marked off as	JDV/DM
09/09/2016	Day shift: leak checks marked off as performed. Pump #3 South LPR changed O-ring and gasket on dicscharge isde strainer. Put on Nitrogen test 100 psi for 2 hours. Past soap test. Night shift: leak checks marked off as performed.	KH/JDV/DM
09/10/2016	Day shift: leak checks marked off as performed. North LPR pump #3 placed in vaccum, once pulled down, return system online, passed soap test, passed sniffer test, switched on. North LPR pump #1 Isolated from system, hooked up to suction line for recover. Installed bearing kit, replaced gaskets, passed nitrogen test, passed soap test, hooked up to vaccum pump. after unit was pulled down to a deep vaccum, placed back online. Night shift: leak checks marked off as	JDV/CG/DM
09/11/2016	Day shift: leak checks marked off as performed. North LPR liquid pump #2, isolated from system, hooked up suction line for recovery. Inner liner of pump has what appears to be stress fractures, took pictures and sent to APEX. Awaiting confirmation on pump viability for repairs. Installed stop plates and gasket to seal up valve bodies where pumpt attaches at North LPR. Night shift: leak checks marked off as performed.	JDV/TR/DM
09/12/2016	Day shift: leak checks marked off as performed. Sniff test of North LPR liquid pumps, leak found on North LPR ice filter gauge, isolated and recovered gaulge lines. Replaced lines with new copper tubing, new fittings, and new gauges. Passed soap and sniff test. Isolated H-1 conpressor from system, hooked up suction line to B-2 compressor for recovery. Awaiting replacement discharge check valve from APEX. Shut down entire system with exception of condenser water pumps. allowed to sit one hour, then performed manual discharger of excess air from purger line. Night shift: leak checks marked off as performed.	JDV/CG/DM



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
09/13/2016	Day shift: leak checks marked off as performed. Added H20 to the colycal expansion tank (3 gallons). Night shift: leak checks marked off as performed.	TMR/KH/DM
09/14/2016	Day shift: leak checks marked off as performed. Evaporator #10 liquid valve, strainer and check valve. Unbolted valves and strainer from liquid line, brought down to bench for rebuild. Changed all the gaskets, O-rings, seals and packing. Took back in freezer A and reinstalled. Had to do a manual air purge of system due to compressor shutdown (H-3) too high of discharge pressure. Night shift: leak checks marked off as performed.	KH/TDV/DM
09/15/2016	Day shift: leak checks marked off as performed. Boiler tech was here today and performed a total test on all condensers. Took old sump pump ouit and put new van pump in. Took pump out of sardine pond. Power washed top of condensers. Night shift: leak checks marked off as	KH/JDV/DM
09/16/2016	Day shift: leak checks marked off as performed. Leak found at auto purger station in engine room. Isolated purger awaiting info on rebuild kit. Was able to tighten packing of valve stem, stopped leak. Leak found on south LPR ice filter gauges. Isolated from system, used suction line for recovery. Replaced gauges, filters and copper supply line. Passed sniffer and soap test. Opened back up suction on North LPR to pyull out accumulated vapor. After a vaccum was reached closed off suction. Will check again tomorrow before starting nitrogen tet of north LPR/Freezer B. Night shift: leak checks marked off as performed.	JDV/DM
09/17/2016	Day shift: leak checks marked off as performed. Put back up wall separating freezer A from B. Turned down North LPR receiver fill control solenoid from Fill<65% to Fill<50%. Night shift: leak checks marked off as performed.	JDV/DM
09/18/2016	Day shift: leak checks marked off as performed. Shut down freezer B and South LPR. Turned off liquid line to south LPR, manual open of all hot gas solenoid plungers and all hot gas return plungers. Hooked up service hoses to the hot gas and HG return valve bodies at south LPR. left open suction lines to evacuate freezer B system. Installed proper 1" psi check valve on engine room purger. purger is now operating properly. shutdown main suction valve on north LPR at 3:45 pm. Due to high discharge pressure (208 psi). discharger pressure is coming down since valve was closed. had to shut down B-2 compressor due to too much suction. 6:00pm. Night shift: leak checks marked off as performed.	JDV/DM
09/19/2016	Day shift: leak checks marked off as performed. Put evaporators 16 and 17 back on line to help remove moisture from freezer hallway. Raised temperature from -15 o -17 on evaporators 12, 13, & 11 in freezer A. Night shift: leak checks marked off as performed.	JDV/DM



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
09/20/2016	Day shift: leak checks marked off as performed. Changing our system dryers, replacing standard spolan RC-110098 filter with sporlan RC-10098-HH to help lower acid content of system charge. 10 dryer tubes in total 4 dryer cartridges per tube. Isolated dryer tube, hooked up suction line, after unit achieved vaccum, removed suction line, opened unit up and changed out dryer filters, closed unit back up, hooked up vaccum pump and let run until a deep vaccum as reached and sustained, returned tube to service, passed sniffer and soap test, repeated above steps for the remaining 9 tubes. Night shift: leak checks marked off as performed.	JDV/DM
09/21/2016	Day shift: leak checks marked off as performed. 7:30 am fill North LPR & Freezer B with nitrogen (100 lbs to start). 10:00 am fill North LPR & Freezer B with nitrogen 150 lbs. No pressure drop at 10:00 am when brought up to pressure. Turned off fans on condenser #2 cleaned air fins with pressure washer, returned to service. Night shift: leak checks marked off as performed.	JDV/DM
09/22/2016	Day shift: leak checks marked off as performed. Finished nitrogen test of North LPR/Freezer B. Held 150 psi for 24 hours. Opened drain line, purged nitrogen, removed grit from lower drain stem access, inserted inspection camera, observed water condensation inside tank, closed system backup, hooked up vaccum pumps and took system down to a deep vaccum. Once in vaccum filled system back up to 20 psi with nitrogen, purged nitrogen and began vaccum cycle again. This was done again at 2:00 pm and once more at 6:00 pm. Due to high head pressure had to shut dwon system and perform a manual purge of air from the condenser. Night shift: leak checks marked off as performed.	JDV/DM
09/23/2016	Day shift: leak checks marked off as performed. Started another cycle of nitrogen/vaccum purges on North LPR/Freezer B system, filled to 20 psi of nitrogen, purged nitro, brought down to a deep sustained vacuum, then started again with 20 psi of nitrogen, etc. was done first at 7:00 am, 11:00 am, and 3:00 pm. At 6:00 pm removed vaccum pump filled with 20 psi of nitrogen. Took oil samples from compressors, H-3, B-2, B-3 sending to GEA Refrigeration for testing. Night shift: leak checks marked off as performed.	JDV/DM
09/24/2016	Day shift: leak checks marked off as performed. Let nitrogen charge out of north LPR/Freezer B system, hooked up vaccum pump and pulled down to 14 hg, left system isolated. Night shift: leak checks marked off as performed.	JDV/DM
09/25/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JDV/CG/DM



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
09/26/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JDV/DM
09/27/2016	Day shift: leak checks marked off as performed. At 4:30 am the slide valve seal went out on H3 compressor, causing an oil leak. Oil went through the conduit and ended up on a circuit board. Shut discharge valve and left suction valve open until compressor had atmospheric pressure. Then it was shut as well. Will be off line until parts arrive. Night shift: leak checks marked off as	KH/DM
09/28/2016	Day shift: leak checks marked off as performed. H-1 compressor, opened discharge and suction valves then started compressor. When pressure went up the main oil feed from the pump to the filters come off (on the pump side) the tube was not pushed in all the way. So it didn't seat right when it was replaced. Causing an oil leak. Shut off discharge, suction and crossover service valves. Installed new tube and compression fitting. Hooked service hose to H-2 compressor discharge and the other side to suction side of H-1 to pressure test the tube. Went up to 80 psi. Used soap to check for leaks, no leak found. Reopened all valves, cleaned up oil. Manually purged the system. Fired off H-1 again ran for about 30 minutes then the shaft seal started leaking. shut off compressor and isolated it to fixed the leak. 50 lb loss of R-22 and 50 gallons oil. Opened all valves on 106 spiral freezer. started B-1 and g-4 compressors to see how 106 was working. Everything seemed to work good. On H-2 compressor the pump shaft bearings flange was leaking a small amount of oil, took off and replaced o-ring the reinstalled. Night shift: leak	KH/DM
09/29/2016	Day shift: leak checks marked off as performed. Production today running B-1, B-2, B-3, H-2 and H-4 compressors. H-2 compressor, changed O-rings and outer shaft seal resintalled. Pressurized compressor to 80 psi and the shaft seal held. Opened all valves and started compressor. let it run for 5 minutes. then noticed that the slide valve housing, pump side, had a smalll oil leak. turned compressor back off and isolated it. Put it on a suction with a B-2 compressor. Took it off of suction once it went to atmospheric pressure. Hooked service hose to the service valve on the upper side of filter housing to drain oil out of H-1. Turned on oil pump to push the oil out into a 55 gallon barrel. took the front of the slide valve housign apart on H-3 compressor to see why it was leaking it seemed to be the unloader radial bearing what had come apart and damaged the unloader cover internal teflon cap seal.	KH/DM



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
09/30/2016	Day shift: leak checks marked off as performed. Changed out H-1 compressor discharge check valve and gasgets. Took out filters and cleaned strainer in line before viking oil pump. Charged compressor with nitrogen up to 20 psi through suction side service valve. then discharged out of the service valves on the strainer flange, the filter flange and the bottom of compressor to help push as much oil out as possible. Manually purged the system do to hight discharge pressure. Changed fan belt on fan #2 of tower #2. Night shift: leak checks marked off as performed.	KH/DM
10/01/2016	Day shift: Leak checks marked off as performed. Took apart slide valve assembly for rebuild. Waiting on rebuild kit for H-3 compressor. Night shift: leak checks marked off as performed.	JDV/CSG
10/02/2016	Day shift: Leak checks marked off as performed. Took apart slide valve assembly for rebuild. Waiting on rebuild kit for H-1 compressor. Night shift: leak checks marked off as performed.	KH/DM
10/03/2016	Day shift: Leak checks marked off as performed. Turned evaporator #10 on set parameter from 0 to -20. double drum screens motor burned up. Due to vibration causing wire to chafe in the flex conduit, also burned up contactor due to same problem. replaced motor, wire and contactor with new drained gear box oil because the gear box had to much oil in it. Night shift: leak checks marked off as performed.	KH/DM
10/04/2016	Day shift: Leak checks marked off as performed. Turned on evaporator fans for evaporator #1 and #5 in freezer B to help dry out the floor. Changed evaporator settings in sequence panel for evaporator #2, #3 and #4 from -5 to 50 degrees in order to clear alarms. changed evaporators 1 and 5 to 49 degrees. Manually purged system due to high discharge pressure. (condenser?) pump went our, strated to disassemble for rebuild. NIght shift: leak checks marked off as performed.	JDV/DM
10/05/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JB/DM
10/06/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JB/DM
10/07/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	TMR/DM
10/08/2016	Day shift: leak checks marked off as performed. Put two 1500 psi pressure relief valve on hydro, (TMR). Manually purged refrigeration system. Night shift: leak checks marked off as performed.	TMR/KH/DM



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
10/09/2016	Day shift: Leak checks marked off as performed. Night shift: leak checks marked off as performed.	TMR/KH/
10/10/2016	Day shift: leak checks marked off as performed. H-1 compressor changed out cylinder plate internal O-ring, unloader piston external teflon capseal, unloader piston external O-ring. Bulkhead external O-ring, unloader cover external O-ring, unloader external retaining ring and unloader conver internal teflon capseal, replaced all old with new. Reinstalled unloader cylinder housing and the unloader cover. Tightened flange bolts to 150 foot lbs. with a torque wrench. We then Nitrogen tested the compressor set to 50 lbs and soap tested all fittings and flanges. No leaks were found. We then set the nitrogen test to 100 psi and will check tomorrow to see if the test has dropped any psi. changed out feed belt tensioner switch in the 106 spiral freezer. Night shift: Leak checks marked off as performed. The fire alarm went off at 8:00 pm due to cleaners opening the	KH/TMR
10/11/2016	Day shift: leak checks marked off as performed. H-1 compressor passed the nitrogen test overnight. Put new oil filters in H-1. Changed oil filters on B-1 compressor. Took out 10 gallons of oil. Belt jammed on the 106 spiral freezer due to outfeed shaft moving left because set screws were loose. Put it back into position and tighened set screws. Night shift: leak checks marked off	TMR/CG
10/12/2016	Day shift: leak checks marked off as performed. Purged system due to high discharge pressure. Changed O-rings seals on south LPR. Sniff test north to south. Changed filters on the south LPR. Put H-1 back on nitrogen test at 100 psi. Night shift: leak checks marked off as performed.	KRH/CG/DM
10/13/2016	Day shift: leak checks marked off as performed. Leak checked the compressor room. Night shift: leak checks marked off as performed.	DM/JB
10/14/2016	Day shift: leak checks marked off as performed. Changed bearing / leak test on north and south LPR. Night shift: leak checks marked off as performed.	DM/CG/JB
10/15/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	DM/CG/JB
10/16/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	DM/CG/JB



	Ocean Cold Main System	
DATE	DESCRIPTION OF SERVICE	TECHNICIAN
10/17/2016	Day shift: leak checks marked off as performed. Purged air out of system due to high discharge pressure. Took H-1 compressor off of nitrogen test. The test went from 100 psi to 92 psi. Putting Zerol oil inot H-1 compressor by putting it into a vacuum and pulling it out of a 55 gallon drum. Vacuum was taking too long so we hooked up an oil transfer pump and pumped two 55 gallon drums of oil into H-1. H-1 was on nitrogen test for 5 days and lost 8 psi in that time.	KRH/CSG/DM
10/18/2016	Day shift: leak checks marked off as performed. Turned power back on H-1 compressor. Turned on oil pump to push oil through the compressor to get it ready for start up. Night shift: leak checks marked off as performed.	KH/TR/DM
10/19/2016	Day shift: leak checks marked off as performed. Brought the H-1 compressor to -13 inches of vacuum, opened up the suction and discharge valves. Opened hand expansion valve 3 turns out. Started compressor and centered slide valve. Checked for leaks with propane sniffer, no leaks found. Shut down H-2 compressor and isolated compressor by closing suction and discharge valves. Hooked up a service hose to suction side of B-3 and H-2 to evacuate H-2. Once evacuated closed valve to B-2 and let H-2 become atmosheric.	KH/TR/DM
10/20/2016	Day shift: leak checks marked off as performed. Started service on H-2 compressor. Cleaned oil pump strainer, changed oil filters ad replaced old shaft seal with a new one. Added oil to gear boxes in 106 spiral geared bearings in production area. Changed auger bearings on cross auger. Night shift: leak checks marked off as performed.	KH/CG/DM
10/21/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KH/CG/DM
10/22/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	DM/TR
10/23/2016	Day shift: leak checks marked off as performed. Changed filters on the south LPR. Added gear box oil to 106 spiral. Night shift: leak checks marked off as performed.	KH/TR/DM
10/24/2016	Day shift: leak checks marked off as performed. Changed filters on both north and south LPR's. Night shift: leak checks marked off as performed.	KH/TR
10/25/2016	Day shift: leak checks marked off as performed. Full system shut down and manual purge of excess air from condenser discharge line. Night shift: leak checks marked off as performed.	JDV/DM



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
10/26/2016	Day shift: leak checks marked off as performed. Pulled out 1.2 lbs of R-22 liquid from the HPR, into a (b) (4) labled vessel that will be shipped out for testing as per request from Al Carter. Filled a second vessel with just under 1 lbs of R-22 liquid. The second sampe was taken from the recovery vessel located in the Whitney building. This was the vessel used by (b) (4) during the clean out/recovery of the Ocean Gold (Blue building) R-22 system. A second set of sample bottles showed and we repeated the same process, but only pulled out a half a pound each. Note: Al Carter had ordered a second set of sample bottles to get a second opinion on the analysis of the freon.	DM/KH/JDV
10/27/2016	Day shift: leak checks marked off as performed. Leak found at upper strainer bank after King valve, but before dryer bank. Isolated and recovered Freon from strainer housing. Removed leaking bushing. Cleaned up bushing threads and applied teflon tape, reseated and reassembled. Pulled unit down to a deep vacuum. Changed filters on south LPR. Turned off liquid lines to 6a and 6b evaporators in Freezer A. NIght shift: leak checks marked off as performed.	CG/DM
10/28/2016	Day shift: leak checks marked off as performed. Turned off liquid to 92 spiral freezer and serviced filters on evaporator #11. Turned off liquid feed, opened expansion valve, applied heat unitl unit was evacuated. Closed expansion valve opened up ice filter housing, screen was clean, reassembled unit and returned it to service. Changed filters on south LPR three (3) times.	JDV/CG/TR
10/29/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JDV
10/30/2016	Day shift: leak checks marked off as performed. Checked ice filters on evaporators 9, 11, 14a, 14b. Changed expansion valves from 2.5 turns to 2 turns on evaporators 11, 14a, 14b. Cleaned filters on south LPR, 8 times. Night shift: leak checks marked off as performed.	TR
10/31/2016	Day shift: leak checks marked off as performed. At 2:30 pm we purged the system due to high discharge pressure. Cleaned ice filters on the south LPR. Night shift: leak checks marked off as performed.	JDV/TR/CG
11/01/2016	Day shift: leak checks marked off as performed. Changed filter on south LPR. Night shift: leak checks marked off as performed.	TR/KH



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
11/02/2016	Day shift: leak checks marked off as performed. Cleaned ice filters on liquid side of evaporaters # 8, 10, 11,13, & 14. Ran hand expanation valve in and out then set at 2.5 turns out from closed. Isolated 76 and 92 and 106 spiral freezers on liquid side to evacuate all R-22 from them. Isolated evaporator #6 not in service. opened liquid, suction, hotgas and hotgas return valves on evaporator #12 to put back into service. Night shift: leak checks marked off as performed. Changed filters on south LPR all night. 7:00 pm to 4:00 am	KH/TR
11/03/2016	Day shift: leak checks marked off as performed. Changed ice filters on south LPR. Cleaned ice filters on evaporators #8,10,11, 9,12,13. Pressured all up with hotgas and soap tested hotgas and liquid side solenoid valves, no leaks found on 8,9,10,11 evaporators. Changed hand expanation valve from 2.5 turns to 1.75 turns and 2 turns on 12 & 13 from 2.5 turns. Changed parameters on Evaporator 14 so its not in series. Isolated 76, 92 amd 106 spirals on suction hotgas and hotgas return. So all freezers areoff line. Changed parameters on Evaporator 12 it is now back on line. Set #14 parameters to -5 so it will call for less liquid.	KH/DW
11/04/2016	Day shift: leak checks marked off as performed. Changed filers on south LPR 3 times. Hooked up recovery pump and tank to 92 spiral freezer and pulled system into a deep vacuum. Isolated B2 compressor from the system for repairss. Hooked up recovery pump with a tank to B2 compressor. Ran pump all day and reached -15Hg vacuum, will start pump back up tomorrow morning to achieve a deep vacuum. Night shift: leak checks marked off as performed.	TR/CG/JDV/DM
11/05/2016	Day shift: leak checks marked off as performed. Changed ice filters on south LPR. After holding a deep vacuum over night, hooked up nitro pack to the 92 spiral and filled the system to 150 psi (10:39am) will pressured up for 24 hours. Started back up B2 recovery pump, suction is at -15Hg @8:00 am, will continue unitl -29/-30Hg is achieved. Isolated 76 sprial freezer, hooked up recovery pump and tank, pulling system down to a deep vacumm. Night shift: leak checks marked off as performed.	JB/JDV/TR/DW
11/06/2016	Day shift: leak checks marked off as performed. Broke vacuum on B2 compressor with nitrogen. Brought pressure up to 100 psi. Hooked hose's up to bottom service valve then open up service valve on filter housing flange and oil pump strainer. Evacuated about 135 gallons of oil. After evacuation of B2, we changed out 4 oil filters and cleaned oil pump strainer. Changed out service valve under suction strainer. Oil leak on slide valve oil control manifold. Changed O-rings and there was a snapped bolt on the mainifold. Replaced bolt. Put 110 gallons of zerol oil (new) back into B2. Had to wait for oil to get to temperature before start up. Night shift: leak checks marked off as performed.	JDV/TR/DM



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
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11/07/2016	Day shift: leak checks marked off as performed. Replaced faulty poteniometer on H2 compressor. Recalibrated slide valve, passed test of startup, full load, then unload. 195 psi shutdown and manual purge of excess air from condenser discharge line. Changed ice filter on south LPR. 92 help pressure, holding at 150 psi, 76 pulled down to -30 Hg. Hooked up recovery pump & bottle to B-3. Started B2 compressor. leak found on B2 shaft seal after startup. Night shift: leak checks marked off as performed.	KDV/TR/DM
11/08/2016	Day shift: leak checks marked off as performed. Isolated and recoverd R-22 from compressor B3. After recovery was completed and a deep vacuum reached, broke vacuum with nitrogen, brought unit up to 100 psi. Hooked up drain line for oil and purged compressor of close to 125 gallons of oil. Shut off oil heaters for B3. changed ice filters on south LPR, six (6) times. Night shift: leak checks marked off as performed.d	JDV/CG/DM
11/09/2016	Day shift: leak checks marked off as performed. B3 compressor: changed discharge check valve. Changed (4) oil filters and cleaned oil pump strainer. Replaced compressor main shaft seal. Filled unit with nitrogen to 93.8 psi (ran out of nitrogen) will let it sit overnight.	KH/DM
11/10/2016	Day shift: leak checks marked off as performed. Night shift: @ 4:00 pm B3 still holding pressure 93.8 psi nitro. Purged nitrogen and hooked up a vacuum pump to bring system down to 29Hg. Will let system set overnight to ensure repairs.	JDV/JB/DM
11/11/2016	Day shift: leak checks marked off as performed. Vacuum held on B3 compressor, filled unit with new oil, and turned oil heaters back on to bring unit back up to temperature. Once up to temperature put unit back online. Isolated B2 compressor, hooke up recovery pump plus bottle and left unit running overnight to pull unit down to a deep vacuum for repoairs to main shaft seal. Night shift: leak checks marked off as performed.	JDV/TR/DM
11/12/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JB/CG/DM
11/13/2016	Day shift: leak checks marked off as performed. Took B2 compressor off of recovery once it got down to 25Hg. Took shaft seal out, B2 has a different shaft seal than B3. So we have to wait on parts. Put the shaft sseal assembly back in place to keep the inside of the compressor pump clean of any debris. Hooked up a service hose to R-22 vessel and service valve of suction side of B3 to evacuate recovered R-22 back into the system. Change the ice filters on sout LPR. Night shift: leak checks marked off as performed.	KH/DM



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
11/14/2016	Day shift: leak checks marked off as performed. Changed/cleaned ice filters on the south LPR at 10:00 am and 11:30 am. Night shift: leak checks marked off as performed.	DM
11/15/2016	Day shift: leak checks marked off as performed. Completed the isolation of 106 spiral freezer from the system. Opened solenoid bypass on liquid, hotgas, hotgas return. Hooked up a recovery pump and tank to 106 evaporator B, and pulled down into a deep vacuum, then did the same to evaporator A. B4 compressor had a small oil leak on the slide valve oil control manifold. We isolated the manifold, hooked up a recovery pump and tank and pulled it into deep vacuum. Removed manifold, retaped the fittings and reinstalled. NIght shift: leak checks marked off as	JDV/DM
11/16/2016	Day shift: leak checks marked off as performed. Sniff tested compressor room and south LPR at 7:00 am. Recovered 30 lbs of R-22 from 106 evaporators and returned to system. Hooked back up to recovery pump as we are only half way to deep vacuum. Glycal pump had a shaft seal leak, shut down the entire system. Isolated the pump and replaced with spare pump package. During the system shutdown we did a manual purge of excess air from condenser discharge line. Changed out the valve body stem assemblies on the south LPR, right and left infeed shut offs to ice filters. Changed ice filters on south LPR 2 times. NIght shift: leak checks marked off as	DM/JDV/TR
11/17/2016	Day shift: leak checks marked off as performed. Finished pulling 106 spiral freezer down to a deep vacuum. Moved tank and pump to Freezer B to pull down #6 evaporator.	KH/JDV/DM
11/18/2016	Day shift: leak checks marked off as performed. Leak tested in compressor room, hall ways, break rooms and freezers. Night shift: leak checks marked off as performed.	KH/CG/DM
11/19/2016	Day shift: leak checks marked off as performed. Hooked up recovery pump and bottle to evaporator #6. checked expansion valves for blockage on evaporator #8,9,10,11,12,&,13. All evaporators checked out. Night shift: leak checks marked off as performed.	CG/JDV/DM
11/20/2016	Day shift: leak checks marked off as performed. Evaporator #6a has been pulled down to a deep vacuum. Moving recovery pump and bottle to 6b. We evacuated 9 lbs of R-22 was recovered from evaporator #6. Night shift: leak checks marked off as performed.	JDV/DM
11/21/2016	Day shift: leak checks marked off as performed. Changed the O-ring on B2 compressor's shaft seal and flange housing. Pressurized B2 with 100 psi of nitrogen. Soap tested the seal and a small amount of nitrogen was passing by the seal. We took B2 off of the test and attached a vacuum pump to the suction side of the compressor. Night shift: leak checks marked off as	DM/TR



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
11/22/2016	Day shift: leak checks marked off as performed. B2 has been brought down to a deep vacuum. We took the recovery pump off of B6 evaporator. It is now under a deep vacuum. On 14a and 14b evaporator we shut off the liquid, hotgas and hotgas return valves. Left suction valves open for evacutation of 14a & 14b. Opened liquid hand expansion valve and liquid and hotgas solenoid valves. Tomorrow we will shut suction valve and hook the evaporators up to a recovery pump. Night shift: leak checks marked off as performed.	KH/TR/DM
11/23/2016	Day shift: leak checks marked off as performed. Isolated from the system a recovery pump and bottle to evaporator 14a. Checked expansion valves on evaporators 9,10,11,12,13 & 8. Turned all the expansion valves down for the listed evaporators 1/4 turn each. Closed hotgas & hotgas return lines from on lines going into Freezer A, evaporator 14a & 14b section. Hooked both lines up to a suction for recovery, once a vacuum was reached, hooked up recovery pump and tank to bring both lines down to a deep vacuum. Night shift: leak checks marked off as performed.	JDV/DM
11/24/2016	Day shift: leak checks marked off as performed. After isolating evaporator 14a from the system, we hooked up a recovery pump & tank to bring the unit under a deep vacuum. Evaporator A on spiral freezer 106 went from -28Hg to 40 psi. Either the liquid line stop valve or Hotgas pressure line is leaking by. Closed stop valves on liquid and hotgas lines. Shut off Hotgas line and hotgas return line going into Freezer A evaporator 14a & 14b. Hooked up a jumper hose between the two and allowed suction bleed line to recover liquid from the Hotgas return line. Night shift: leak checks marked off as performed.	JDV/CG/DM
11/25/2016	Day shift: leak checks marked off as performed. Isolated and recovered #3 filter dryer. Isolated compressor H2 from the system. Hooked up to a recovery pump & bottle. After a deep vacuum is reached we will be changing out oil and oil filters. Night shift: leak checks marked off as	JB/CG/DM
11/26/2016	Day shift: leak checks marked off as performed. Leak test engine room & cold storage. Changed ice filters ay 5:40 pm. Isolated and recovered #1 filter dryer. Night shift: leak checks marked off as performed.	KDV/CG/DM
11/27/2016	Day shift: leak checks marked off as performed. Recovery pump on H2 failed, it would not pull a vacuum. After bringing Freezer A / evaporator 14a under a deep vacuum, isolated the coil and moved recovery pump to engine room to continue pulling dwon H2. Returned 200 lbs of R-22 recovered from evaporator 14a to the system. Night shift: leak checks marked off as performed.	CG/JDV/TR
11/28/2016	Day shift: leak checks marked off as performed. Finished recovery of H-2, filled with nitrogen to 100 psi, then purged oil to recovery barrel. Most of oil out, will finish purging oil tomorrow. Turned off oil heaters. Change ice filters two times. Night shift: leak checks marked off as performed.	KH/TR/DW



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
11/29/2016	Day shift: leak checks marked off as performed. Evacuated a small somount of oil from H-2. Put 110 gallons of new oil in (2 or 4)? H-2. Put on vacuum will start up tomorrow. Night shift: leak checks marked off as performed.	KH/TR/DM
11/30/2016	Day shift: leak checks marked off as performed. After H-2 reached a deep vacuum, opened unit back up to system and ran it for 15 minutes, passed the soap and sniffer test. Opened B-2 back up to the system to test O-ring repair on main shaft seal. After 15 minutes of running spotted oil leak on main seal, unit was also pulling a vacuum through the oil drain line. Once again, isolated the unit from the system, hooked up B-3 suction for initial recovery, after 30 minutes hooked up to a recovery pump and bottle. Night shift: leak checks marked off as performed.	KH/TR/DM
12/01/2016	Day shift: leak checks marked off as performed. B-2 was under a deep vacuum, took off vacumm and changed shaft seal and put the compressor back on a vacuum pump.	KH/CG/DM
12/02/2016	Day shift: leak checks marked off as performed. Leak test engine room, cold storage hallway, freezer A & B, Clear Ocean & lunch room. Night shift: leak checks marked off as performed.	DM/OB
12/03/2016	Day shift: leak checks marked off as performed. Transferred oil from H-1 compressor to B-3. Leak test ER,CSH, F/A, F/B, CO & LR.	DM/JDV/CG
12/04/2016	Day shift: leak checks marked off as performed. Got B-2 compressoer back on line afer installing new shaft seal. Night shift: leak checks marked off as performed.	KH/TMR/DM
12/05/2016	Day shift: leak checks marked off as performed. Changed filter dryers on dryers 1,2,3,4,& 5. After change out placed all 5 dryers in vacuum. Found leak on King valve coming out of HPR. Tighened packing bolts, check later, no leak found. R-22 loss 20 lbs. Night shift: leak checks marked off as performed.	TR/DM
12/06/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	TR/DM
12/07/2016	Day shift: leak checks marked off as performed. Leak test on the engine room, CSH, Freezer A/B, Clear Ocean, & lunch room. Night shift: leak checks marked off as performed.	KH/CG/DM
12/08/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JB/CG/DM



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as	
12/09/2016	performed.	KH/CG/DM
12/10/2016	Day shift: leak checks marked off as performed. Pulled oil samples from compressors H-1, H-2, B 2 & B-3 in the engine room. We will send them out for testing on Monday. Night shift: leak checks marked off as performed.	JDV/DM
12/11/2016	Day shift: leak checks marked off as performed. Opened back up filter dryers 1 through 5, the Oring on dryer #4 failed. Isolated and recovered #4 dryer tube and replaced faulty O-ring. Put unit into vacuum and it passed a soap test, placed back online. Isolated and recovered dryer tubes #6 & 7. Will change out dryer elements tomorrow.	JDV/TR/DM
12/12/2016	Day shift: leak checks marked off as performed. Checked expansion valves on evaporators 9, 12, 11, 13 and all were in working order. Evaporator 12's coil was frozen solid. Placed unit on an extended defrost cycle to clear the coil. Changed out dryer elements on #6 & #7 dryer tubes. Placed in a vacuum. If vacuum holds will start recovery on tubes #8 & #9 tomorrow, Changed ice filters 4 times on south LPR. Night shift: leak checks marked off as performed.	KH/TR/DM
12/13/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	DM/TR
12/14/2016	Day shift: leak checks marked off as performed. Night shift: leak check marked off as performed.	
12/15/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KH/CG/TR
12/16/2016	Day shift: leak checks marked off as performed. Cleaned filters on evaporators outside and ice filters on south LPR one time.	JB/CSG
12/17/2016	Day shift: leak checks marked off as performed. Cleaned filters on south LPR. Night shift; Leak checks marked off as performed.	CG/
12/18/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	CG/JDV



DATE	DESCRIPTION OF SERVICE	TECHNICIAN
12/19/2016	Day shift: leak checks marked off as performed. Dryers 6 and 7 held vacuum and passed the pressure and soap test. Place back on line, began recovery on dryer filters 8 and 9. Had to replace end strainer cap on filters 8 and 9, replaced dryer elements and put back together and pulled into a vacuum. Started recovery on dryer tube 10. Changed out dryer elements on dryer #10 and changed the strainer endcap due to wear. Night shift: leak checks marked off as	JDV/TMR/DM
12/20/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	DM/TMR
12/21/2016	Day shift: leak checks marked off as performed. Dryers 8,9 and 10 all passed vacuum/pressure and soap tests. Placed back online. Change filtes on the south end. Night shift: leak checks marked off as performed.	JDV/CSG
12/22/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	KH/CG
12/23/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JB/CG
12/24/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JDV/CG
12/25/2016	Day shift: leak checks marked off as performed. Night shift: leak checks marked off as performed.	JDV/TMR
12/26/2016	Day shift: leak checks marked off as performed. Turned on H-2 and B-2 compressors. Turned off H-1 and B-3 compressors to do and oil change. H-1 had signs of gasket, seal and O-ring erosion and B-3 had signs of inter pipe erosion. H-1 had briddle rubber pieces in the filter housing and B-3 had metal particulates mixed in the oil. This was found during filter change.	KH/TMR